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EXAMINER	
CANTELMO, GREGG	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/038,782	FRECH ET AL.	
	Examiner	Art Unit	
	Gregg Cantelmo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-77* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 19-77* is/are rejected.

7)☒ Claim(s) *12-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/19/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of the species elections in the reply filed on August 9, 2004 is acknowledged. This is persuasive.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 40-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The extent of the presence of absence of the protic solvent as recited in claims 49-52 is unclear. Claim 49 recites absence of a protic solvent whereas subsequent dependent claims recite the presence of a protic solvent. It is unclear as to the particular scope of claims 49-52. Claim 49 has been interpreted such that the protic solvent is absent. Claims 51 and 52 cannot be understood in light of the conflicting claim limitations. Therefore the scope of the invention of claims 51-52 is unclear since the limitations therein are beyond the scope of the independent claim boundaries with respect to the protic solvent.

Claims 40-48 are indefinite. It is unclear whether the solvent moiety is bound to the cross-linker or polymer backbone having an amine group. It would appear that the specification only discloses it is bound to the polymer backbone group and does not have support for binding to anything else. The claim should be amended to clearly reflect what the solvent moiety is bound to.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 5-11, 30, 32, 34, 49 and 53-73 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,789,106 (Rosenmeier).

Rosenmeier discloses a cross-linked polymer electrolyte having a polymer backbone material including both linear and branched polyethylenimine (col. 5, ll. 60-61) a cross-linker (paragraph bridging columns 5 and 6) and a metal salt (col. 9, ll. 22-28 as applied to claim 1).

The polymer thickness has a preferred upper limit of 100 microns (col. 9, line 55 as applied to claim 2).

As discussed above the polymer backbone can be linear or branched polyethylenimine (as applied to claims 5-10).

The polymer can be a copolymer (col. 8, ll. 37-51 as applied to claim 11).

The polymeric material having an inherent degree of elasticity (as applied to claim 30).

The metal salt is an alkali metal salt (discussed above as applied to claims 32 and 34).

Rosenmeier discloses using the material in a fuel cell which includes electrodes on opposing sides of the polymeric material described in Rosenmeier

and wherein the polymer membrane is a proton conducting membrane comprising a PEI backbone, a cross-linking agent and labile protons which are transported across the membrane (col. 9, ll. 29=48, col. 5, ll. 60-61, paragraph bridging columns 5 and 6 as applied to claims 49 and 53).

As discussed above the polymer backbone can be linear or branched polyethylenimine (as applied to claims 54-56).

Rosenmeier discloses a battery comprising electrodes (col. 9, ll. 49-55) a cross-linked polymer electrolyte having a polymer backbone material including both linear and branched polyethylenimine (col. 5, ll. 60-61) a cross-linker (paragraph bridging column 6) and a metal salt (col. 9, ll. 22-28 as applied to claim 57).

As discussed above the polymer backbone can be linear or branched polyethylenimine (as applied to claims 58-60).

Rosenmeier discloses a battery comprising electrodes (col. 9, ll. 49-55) a cross-linked polymer electrolyte having a polymer backbone material including both linear and branched polyethylenimine (col. 5, ll. 60-61) a cross-linker (paragraph bridging column 6) and a metal salt (col. 9, ll. 22-28 as applied to claim 57). The term gradient is undefined in the claim and absent sufficient specificity is broadly interpreted to be any battery including rechargeable batteries wherein the batteries exhibit cyclic charging and discharging (as applied to claim 61).

As discussed above the polymer backbone can be linear or branched polyethylenimine (as applied to claims 62-64).

The salt mixture includes an ion pair (col. 9, ll. 22-28) wherein the lithium ions are capable of diffusing through the electrolyte upon application of an electric field between the opposite electrodes and the other ion attaches to the polymer backbone (as applied to claims 65, 66 and 70).

As discussed above the polymer backbone can be linear or branched polyethylenimine (as applied to claims 67-69 and 71-73).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of JP 06-329793 A (JP '793).

The teachings of claims 1 and 2 have been discussed above and are incorporated herein.

The difference between claims 3 and 4 and Rosenmeier is that Rosenmeier does not disclose of the ionic conductivity of the membrane.

JP '793 is drawn to a polymer electrolyte membrane having a PEI backbone which is further crosslinked to form an electrolyte membrane having an ionic conductivity of up to 1x10-3 S/cm (abstract and paragraph [0018]).

The motivation for providing an electrolyte membrane as taught by JP '793 is that it improves the ionic transport across the electrolyte membrane therefore improving the charge and discharge properties of the battery (paragraph [0019]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier by providing a polymer membrane having an ionic conductivity as taught by JP '793 since it would have improved the charge and discharge property of the battery. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesche , 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

8. Claims 19-22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of Paul (of record).

The teachings of claim 1 have been discussed above and are incorporated herein.

The differences between claim and Rosenmeier are that Rosenmeier does not disclose of the particular cross-linking agents.

Rosenmeier discloses that the polymer backbone such as linear or branched PEI can be cross-linked in forming the polymer electrolyte membrane.

Paul discloses a polymer electrolyte (abstract) comprising a cross-linked PEI electrolyte in the polymer backbone and a dissolved or dispersed metal salt therein (abstract as applied to claim 1). The film has a conductivity of at least about 10-4 S/cm at about 60° C (col. 3, ll. 14-16 as applied to claim 4). The electrolyte comprises cross-linked branched PEI (title as applied to claims 5, 6, 8,

9, 31). The repeating unit comprises -X-N- (note that the R substituent is optional) wherein X is ethylene (col. 3, ll. 5-10 as applied to claim 10).

The plasticizer is a swelling solvent (col. 3, ll. 36-44 as applied to claims 19 and 25).

In the case of the plasticizer, it is added about 10-70% to the total electrolyte (col. 3, ll. 46-59 as applied to claims 20-22).

The motivation for using a plasticizer as taught by Paul is that it enables the salt concentration to be increased to optimize the nitrogen to metal ion ratio (col. 3, ll. 45-49 as applied to claims 19-22 and 25).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier by adding a plasticizer as taught by Paul since it would have enabled the salt concentration to be increased and optimized the nitrogen to metal ion ratio.

9. Claims 23, 24, 26 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of Paul as applied to claims 1, 19 and 25 above, and further in view of Daroux, of record.

The teachings of claims 1, 19-22 and 25 have been discussed above and are incorporated herein.

The differences not yet discussed are of the particular plasticizers in claims 23, 24, 26 and 29.

As evident from the teachings of Paul, it is known to provide a plasticizer in the PEI polymer electrolyte. The presence of a plasticizer enables solvating of

the metal ions in the electrolyte and increase the salt concentration in the polymer (col. 3, ll. 37-40 and 46-48).

Daroux teaches that various plasticizer materials including polyethylene glycol, glymes and propylene carbonate are known to be used in the polymer electrolyte (col. 8, ll. 9-28 as applied to claims 23, 24, 26 and 29).

Daroux teaches that any of these materials can be used to produce the electrolyte for the purpose of enhancing the solubility of the salt in the polymeric electrolyte and enhanced the conductivity of the electrolyte (col. 8, ll. 15-20).

The motivation for selecting either polyethylene glycol, glymes or propylene carbonate is that they all enhance the solubility of the salt in the polymeric electrolyte and enhance the conductivity of the electrolyte and as shown by Daroux are equivalent materials for such purposes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier in view of Paul by selecting either polyethylene glycol, glymes or propylene carbonate since they would have each enhanced the solubility of the salt in the polymeric electrolyte and enhanced the conductivity of the electrolyte and as shown by Daroux are equivalent materials for such purposes. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

10. Claims 23, 26, 28 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of Paul as applied to claims 1, 19 and 25 above, and further in view of Grunwald, of record.

The teachings of claims 1, 19 and 25 have been discussed above and are incorporated herein.

The differences not yet discussed are of the particular plasticizers in claims 23, 24, 26 28 and 29.

As evident from the teachings of Paul, it is known to provide a plasticizer in the PEI polymer electrolyte. The presence of a plasticizer enables solvating of the metal ions in the electrolyte and increase the salt concentration in the polymer (col. 3, ll. 37-40 and 46-48).

Grunwald teaches that various plasticizer materials including polyethylene glycol, dibutyl phthalate and propylene carbonate are known to be used in the polymer electrolyte (col. 8, ll. 9-28 as applied to claims 23, 24, 26 and 29).

Daroux teaches that any of these materials can be used to produce the electrolyte for the purpose of enhancing the solubility of the salt in the polymeric electrolyte and enhanced the conductivity of the electrolyte (col. 8, ll. 15-20).

The motivation for selecting either polyethylene glycol, glymes or propylene carbonate is that they all enhance the solubility of the salt in the polymeric electrolyte and enhance the conductivity of the electrolyte and as shown by Daroux are equivalent materials for such purposes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier

in view of Paul by selecting either polyethylene glycol, glymes or propylene carbonate since they would have each enhanced the solubility of the salt in the polymeric electrolyte and enhanced the conductivity of the electrolyte and as shown by Daroux are equivalent materials for such purposes. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

11. Claims 23, 26, 28 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of Paul as applied to claims 1, 19 and 25 above, and further in view of U.S. patent No. 5,964,903 (Gao), of record.

The teachings of claims 1, 19 and 25 have been discussed above and are incorporated herein.

The differences not yet discussed are of the weight of the solvent in the electrolyte mixture (claims 20-22) and of the particular solvents/plasticizers in claims 26-29.

With respect to the weight of the solvent (claims 20-22):

Gao teaches that the weight ratio of the plasticizer is from about 1-50 wt. %, more preferably about 10-30 wt. % (col. 4, ll. 1-17 as applied to claims 20 and 21). 1 wt. % and about 10 wt. % constitute data points which fall within the range of claim 22.

The motivation for providing the plasticizer in the weight ratio of Gao is that it enhances the degree of absorption of the salt in the polymer electrolyte.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Paul by selecting the weight of the solvent to be within the ranges taught by Gao since it would have enhanced the degree of absorption of the salt in the polymer electrolyte.

With respect to the particular solvents/plasticizers (claims 26-29):

As evident from the teachings of Paul, it is known to provide a plasticizer in the PEI polymer electrolyte. The presence of a plasticizer enables solvating of the metal ions in the electrolyte and increase the salt concentration in the polymer (col. 3, ll. 37-40 and 46-48).

Gao teaches that plasticizers comprise 2-(2-ethoxyethoxy) ethyl acetate, dimethyl adipate, dibutyl phthalate, propylene carbonate, and mixtures thereof (abstract as applied to claims 26-29).

The motivation for selecting the plasticizers of Gao is that it can improve the solubility of the salt while be easily removed from the polymer (col. 3, ll. 19-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier in view of Paul by selecting the plasticizers of Gao since it would have improved the solubility of the salt while being easily removed from the polymer. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v.

Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

12. Claims 33, 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of U.S. patent No. 5,964,903 (Gao).

The teachings of claim 32, with respect to Rosenmeier, have been discussed above and are incorporated herein.

The differences between claims 33, 35 and 36 and Rosenmeier are that Rosenmeier does not disclose of the alternative metal salts.

Gao discloses of using various metal salts (col. 5, ll. 28-40).

The motivation for selecting the particular metal salt is dependent upon the type of battery designed and one of ordinary skill in the art would have recognized that any number of metal salts can be used in the electrolyte as taught by Gao to impart ionic transport across the membrane.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier by replacing the salt of Rosenmeier with the salts taught by Gao since selection of the salt is dependent upon the particular battery design. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

13. Claims 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of Harris (of record).

The teachings of claim 32, with respect to Rosenmeier, have been discussed above and are incorporated herein.

The differences between claims 37-38 and Rosenmeier are that Rosenmeier does not disclose of the ratio of nitrogen atoms.

Harris discloses of controlling the ratio of secondary and tertiary nitrogen atoms in PEI electrolytes for the purposes of improving the conductivity of the nitrogen based polymer.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier by controlling the ratio of the nitrogen atoms in the PEI since it would have improved the conductivity of the polymer.

14. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of Daroux and U.S. patent No. 4,578,326 (Armand).

The teachings of claim 1, with respect to Rosenmeier, have been discussed above and are incorporated herein.

The difference between claims 39 and Rosenmeier is that Rosenmeier does not disclose of the ratio of heteroatoms to ions.

Daroux discloses providing heteroatoms in the polymer membrane.

The polymeric macromolecular material could contain electronegative heteroatoms, such as etheric oxygens, which are capable of associating with the cationic species of the salt thereby making it an ideal component of a solid electrolyte for use in solid electrolyte cells (Daroux, paragraph bridging columns 7 and 8).

Armand discloses that the ratio of the number of heteroatoms to the number of atoms of the alkaline metal of the ionic compound is generally comprised between 4 and 30, and preferably between 8 and 24 (col. 5, ll. 29-36). Also see col. 6, ll. 15-18).

The motivation for selecting this ratio is that the pairs of free electrons on these heteroatoms enhances the ionic conductivity of the polymer.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier by providing heteroatoms in the polymer in a preferred arrange between 8-24 heteroatoms to metal ions since it would have improved the ionic conductivity of the polymer. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesche , 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

15. Claims 74-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenmeier in view of U.S. patent Nos. 3,885,069 (Roberts).

The teachings of claims 1 and 2 have been discussed above and are incorporated herein.

The differences between claims 74-77 and Rosenmeier are that Rosenmeier does not disclose of the particular cross-linking agents.

Rosenmeier discloses that the polymer backbone such as linear or branched PEI can be cross-linked in forming the polymer electrolyte membrane.

A variety of di- and polyhalogenated organic compounds, other than that illustrated by the use of 1,2-dichloroethane, have been employed in the investigative work which led to the process of this invention, as initiators and crosslinking agents in the polymerization of ethylenimine (col. 2, ll. 10.20).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosenmeier by selecting the cross-linker to be a material taught by Roberts since it would have provide a sufficient cross-linker material for crosslinking the PEI polymer of Rosenmeier. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07

Allowable Subject Matter

16. Claims 40-48 and would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record appears to teach, fairly suggest or render obvious the invention of none of the prior art of record teach or fairly suggest a solvent moiety bound to the polymer electrolyte.

It is the bound solvent moieties which act to ensure the salt, once

introduced, remains dissolved or dispersed within or throughout the polymer electrolyte. As a result, a swelling solvent is typically unnecessary for purposes of achieving a final product; that is, while a solvent may be used to "swell" the polymer, in order to introduce the metal salt into the polymer, this solvent may subsequently be removed (by, for example, evaporation), leaving behind the metal salt in a dissolved or dispersed state (paragraph [0070]).

17. Claims 12-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record appears to teach, fairly suggest or render obvious the invention of claim 12 wherein the copolymer has two or more different repeat units as defined in claim 10 or of the repeat units of a copolymer as defined in claim 16.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. UPSAT 5,168,883 (Rainer) discloses a PEI membrane. USPAT 5,096,561 (Akhtar) discloses of a PEI membrane for ionic conduction. USPAT 5,190,695 (Sotomura) discloses a polyamine solid electrolyte. USPAT 5,472,809 (Perton) discloses LiTiSf metal salts for use in electrochemical cells. 5,030,527 (Carpio) discloses a solid aqueous electrolyte comprising PEI.

USPAT 5,008,339 (Anson) discloses a mixed polymer material comprising PEI.

USPAT 5,283,310 (Armand) discloses a copolymer electrolyte.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (571) 272-1283. The examiner can normally be reached on Monday to Thursday from 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. FAXES received after 4 p.m. will not be processed until the following business day. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregg Cantelmo
Primary Examiner
Art Unit 1745

gc

November 1, 2004